

In the Claims:

1 1. [Currently Amended] A digital image processing method
2 comprising:
3 providing digital image data of a plurality of colors of an image, wherein
4 the image data comprises a plurality of sets individually comprising mosaic data
5 of one of a plurality of colors at a plurality of pixel locations;
6 analyzing image data of one of the pixel locations with respect to image
7 data of another of the pixel locations comprising comparing the image data of
8 the one pixel location with the image data of the another pixel location; and
9 adjusting the image data of the one pixel location responsive to the
10 analyzing, wherein the adjusting comprises selecting one of denoising and
11 sharpening responsive to the comparing and adjusting to one of denoise the
12 image data of the one pixel location and sharpen the image data of the one pixel
13 location according to the selection.

1 2. [Original] The method of claim 1 wherein the analyzing comprises
2 analyzing image data of the one pixel location with respect to image data of a
3 plurality of other pixel locations.

1 3. [Original] The method of claim 2 wherein the adjusting comprises
2 adjusting to sharpen the image data of the one pixel location responsive to the
3 analysis of the image data of the one pixel location with respect to image data
4 of one of the other pixel locations and to denoise the image data of the one pixel
5 location responsive to the analysis of the image data of the one pixel location
6 with respect to image data of another of the other pixel locations.

1 4. [Canceled].

1 5. [Currently Amended] The method of claim ~~[[4]]~~ 1 wherein the
2 adjusting comprises adjusting to denoise the image data responsive to the
3 comparing determining a difference of the image data of the one and the another
4 pixel locations to be a within a first set of values and adjusting to sharpen the

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5 image data responsive to the comparing determining the difference of the image
6 data to be within a second set of values.

1 6. [Currently Amended] The method of claim [[4]] 1 wherein the
2 adjusting comprises adjusting to denoise the image data responsive to the
3 comparing determining a difference of the image data of the one and the another
4 pixel locations to be within a first set of values and adjusting to sharpen the
5 image data responsive to the comparing determining the difference of the image
6 data to be within a second set of values different than the first set of values.

1 7. [Currently Amended] The method of claim [[4]] 1 wherein the
2 analyzing comprises applying square root operations to the image data prior to
3 the comparing.

1 8. [Currently Amended] The method of claim [[4]] 1 wherein the
2 adjusting comprises adjusting to denoise the image data responsive to the
3 comparing determining a difference of the image data of the one and the another
4 pixel locations to be less than a threshold and adjusting to sharpen the image
5 data responsive to the comparing determining the difference of the image data
6 to be greater than the threshold.

1 9. [Original] The method of claim 8 wherein the adjusting to sharpen
2 the image data comprises adjusting responsive to the comparing determining a
3 difference of the image data is less than another threshold.

1 10. [Original] The method of claim 9 wherein at least one of the
2 thresholds comprises a single value.

1 11. [Original] The method of claim 9 wherein at least one of the
2 thresholds comprises a transition period of a plurality of values.

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1 12. [Original] The method of claim 8 wherein the adjusting comprises
2 addressing a look-up table responsive to the comparing, and adjusting using
3 values obtained from the look-up table responsive to the addressing and
4 configured to implement the denoising for results of the comparing determining
5 the difference is less than the threshold and to implement the sharpening for
6 results of the comparing determining the difference is greater than the threshold.

1 13. [Original] The method of claim 1 wherein the sets individually
2 comprise image data of no more than a single color.

1 14. [Original] The method of claim 1 wherein the adjusting comprises
2 adjusting utilizing a robust estimation filter.

1 15. [Original] The method of claim 1 wherein the adjusting comprises
2 adjusting utilizing a modified bilateral filter without division operations.

1 16. [Currently Amended] The method of claim 1 wherein the adjusting
2 comprises sharpening the image data of the one pixel location and further
3 comprising demosaicing the sets of the image data after the adjusting
4 sharpening to provide composite image data capable of being utilized to provide
5 a representation of the image.

1 17. [Original] The method of claim 16 wherein the composite image
2 data comprises data of more than one of the colors at individual ones of the
3 pixel locations.

1 18. [Original] A digital image processing method comprising:
2 providing digital image data of a plurality of colors of an image, wherein
3 the image data comprises a plurality of sets individually comprising mosaic data
4 of one of a plurality of colors at a plurality of pixel locations;
5 filtering the mosaic data of the respective sets using a robust estimation
6 filter; and

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7 demosaicing the mosaic data of the respective sets after the filtering to
8 provide composite image data capable of being utilized to provide a
9 representation of the image.

1 19. [Original] The method of claim 18 wherein the filtering comprises
2 filtering using a modified bilateral filter without division operations.

1 20. [Original] The method of claim 18 wherein the filtering comprises
2 denoising the mosaic data responsive to determining a difference of mosaic data
3 of one and another pixel locations being less than a threshold and sharpening the
4 mosaic data responsive to determining the difference of the mosaic data being
5 greater than the threshold.

1 21. [Original] The method of claim 20 further comprising applying
2 square root operations to the mosaic data of the one and the another pixel
3 locations, and wherein the determining comprises determining the difference
4 after the applying.

1 22. [Original] A digital image device comprising:
2 an imaging system configured to provide digital image data of a plurality
3 of colors of an image, wherein the image data comprises a plurality of sets
4 individually comprising mosaic data of one of a plurality of colors at a plurality of
5 pixel locations; and
6 processing circuitry coupled with the imaging system and configured to
7 access the mosaic data of the plurality of sets, to sharpen at least some of the
8 mosaic data of the sets, and to demosaic the mosaic data after the sharpening
9 to provide composite image data capable of being utilized to provide a
10 representation of the image.

1 23. [Original] The device of claim 22 wherein the processing circuitry
2 is configured to sharpen at least some of the mosaic data using a robust
3 estimation filter.

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1 24. [Original] The device of claim 22 wherein the processing circuitry
2 is configured to sharpen at least some of the mosaic data using a modified
3 bilateral filter without division operations.

1 25. [Original] The device of claim 22 wherein the processing circuitry
2 is configured to apply square root operations to the mosaic data to sharpen the
3 at least some mosaic data.

1 26. [Original] The device of claim 22 wherein the processing circuitry
2 comprises processing circuitry of a digital camera.

1 27. [Original] An article of manufacture comprising:
2 a processor-usable medium comprising processor-usable code configured
3 to cause processing circuitry to:
4 access digital image data of a plurality of colors of an image,
5 wherein the image data comprises a plurality of sets individually comprising
6 mosaic data of one of a plurality of colors at a plurality of pixel locations;
7 apply a robust estimation filter to the mosaic data of the respective
8 ones of the sets; and
9 combine the filtered mosaic data to provide composite image data
10 capable of being utilized to provide a representation of the image.

1 28. [Original] The article of claim 27 wherein the processor-usable
2 code is configured to cause the processing circuitry to apply the robust
3 estimation filter comprising a modified bilateral filter without division operations.

1 29. [Original] The article of claim 27 wherein the processor-usable
2 code is configured to cause the processing circuitry to apply the robust
3 estimation filter to denoise and to sharpen the mosaic data in a common
4 processing step.

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1 30. [Currently Amended] The article of claim 27 wherein the
2 processor-usable code is configured to cause the processing circuitry to denoise
3 the mosaic data responsive to a determination of a difference of the mosaic data
4 of one and another of the pixel locations being less than a threshold and to
5 sharpen the mosaic data responsive to a determination of the difference of the
6 mosaic data being greater than a threshold.

1 31. [Original] The article of claim 30 wherein the processor-usable
2 code is configured to cause the processing circuitry to apply square root
3 operations to the mosaic data of the one and the another pixel locations prior to
4 the determinations.

1 32. [New] The method of claim 18 further comprising:
2 determining contrast between a plurality of pixel locations;
3 selecting one of denoising and sharpening according to the determined
4 contrast; and
5 wherein the filtering comprises one of the denoising and the sharpening
6 according to the selecting.

1 33. [New] The article of claim 27 wherein the processor-usable code
2 is configured to cause the processing circuitry to determine contrast between a
3 plurality of the pixel locations, to select one of denoising and sharpening
4 according to the determined contrast, and to apply the robust estimation filter to
5 the mosaic data of one of the pixel locations to perform the selected one of the
6 denoising and the sharpening of the mosaic data of the one of the pixel
7 locations.

1 34. [New] A digital image processing method comprising:
2 providing digital image data of a plurality of colors of an image, wherein
3 the image data comprises a plurality of sets individually comprising mosaic data
4 of one of a plurality of colors at a plurality of pixel locations;
5 analyzing image data of one of the pixel locations with respect to image
6 data of another of the pixel locations;

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7 adjusting the image data of the one pixel location responsive to the
8 analyzing, wherein the adjusting comprises adjusting to one of denoise the
9 image data and sharpen the image data;

10 wherein the analyzing comprises comparing the image data of the one
11 pixel location with image data of the another pixel location; and

12 wherein the analyzing comprises applying square root operations to the
13 image data prior to the comparing.

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1 35. [New] A digital image processing method comprising:

2 providing digital image data of a plurality of colors of an image, wherein
3 the image data comprises a plurality of sets individually comprising mosaic data
4 of one of a plurality of colors at a plurality of pixel locations;

5 analyzing image data of one of the pixel locations with respect to image
6 data of another of the pixel locations;

7 adjusting the image data of the one pixel location responsive to the
8 analyzing, wherein the adjusting comprises adjusting to one of denoise the
9 image data and sharpen the image data;

10 wherein the analyzing comprises comparing the image data of the one
11 pixel location with image data of the another pixel location;

12 wherein the adjusting comprises adjusting to denoise the image data
13 responsive to the comparing determining a difference of the image data of the
14 one and the another pixel locations to be less than a threshold and adjusting to
15 sharpen the image data responsive to the comparing determining the difference
16 of the image data to be greater than the threshold; and

17 wherein the adjusting comprises addressing a look-up table responsive to
18 the comparing, and adjusting using values obtained from the look-up table
19 responsive to the addressing and configured to implement the denoising for
20 results of the comparing determining the difference is less than the threshold
21 and to implement the sharpening for results of the comparing determining the
22 difference is greater than the threshold.

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1 36. [New] A digital image processing method comprising:
2 providing digital image data of a plurality of colors of an image, wherein
3 the image data comprises a plurality of sets individually comprising mosaic data
4 of one of a plurality of colors at a plurality of pixel locations;
5 analyzing image data of one of the pixel locations with respect to image
6 data of another of the pixel locations;
7 adjusting the image data of the one pixel location responsive to the
8 analyzing, wherein the adjusting comprises adjusting to one of denoise the
9 image data and sharpen the image data; and
10 wherein the adjusting comprises adjusting utilizing a modified bilateral
11 filter without division operations.

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